



Pest e-alerts



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Curly Top Virus on Spinach

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Curly top disease of spinach was identified in early April in a field of overwintered processing spinach in western Oklahoma. Symptoms consisted of yellowed and stunted plants with twisted and crinkled young leaves (Fig 1). A relatively low percentage of plants were affected and the disease was most obvious at the edges of field where plant populations were low and stands were not uniform (Fig 2). Jen Olson in the OSU Plant Disease and Insect Diagnostic Laboratory confirmed the presence of Beet Curly Top Virus with a molecular (PCR) test.



Fig 1. Curly top on spinach.



Fig 2. Infected plants are obvious in widely spaced plants.

Beet Curly Top Virus, or its two closely related virus species, is a leafhopper-transmitted virus that causes curly top disease of a range of crops in the western United States including sugar beets, tomatoes, peppers, and spinach. We have had sporadic problems with curly top on tomatoes and peppers in Oklahoma. It can be a limiting factor in tomato production in areas where the virus is a persistent problem. Beet leafhoppers acquire the virus as nymphs from weedy annual and perennial plants that are reservoirs of the virus. There are over 300 plant species from 44 families that are host of the virus. In the western United States where the epidemiology of curly top has been studied (mostly Calif.), leafhoppers migrate each year from the foothills where they overwinter into the valleys where crops are grown. Once in the valleys they transmit the virus to crop plants and the level of the disease observed each year depends on leafhopper numbers and the percentage carrying the virus. They undergo several generations in the agricultural valleys during the summer and apparently can acquire the virus from weedy hosts such as pigweed, mustards, lambsquarter, and Russian thistle. Later generations then transmit the virus into late-planted tomatoes. Little is known about the epidemiology of the disease in eastern areas of its range such as in Oklahoma where curly top is sporadic from year to year.

This is a relatively early appearance of curly top disease compared to the outbreaks we have observed on tomatoes and peppers (Fig 3) when symptomatic plants appear in June. It will be interesting to monitor the curly top situation this year. Hopefully we will escape the disease on summer crops. Aside from planting disease resistant varieties of sugar beets and beans, there are no effective controls for curly top.



Fig 3. Curly top on tomato (L) and chili peppers (R).

Dr. Richard Grantham - Director, Plant Disease and Insect Diagnostic Laboratory

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